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MEDICAL HISTORY

OF THE LATE

WAR WITH RUSSIA, &c.

BY

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THE third topic—under which it was proposed to consider the medical history of the late war against Russia—demands a careful and extended investigation. It embraces the period of time from October, 1854, till June, 1856. During this period I propose to consider—

III.—THE HISTORY OF THE SICKNESS, DISEASE, AND DEATHS, IN THE CAMP BEFORE SEBASTOPOL AND AT BALAKLAVA.

For convenience of description, the period embraced by the events may be considered in two eras, each of which are marked by distinctive features.

The first era extends over the first seven months' occupation of the Crimea in the camp before Sebastopol, during which the losses sustained by the allied forces from disease alone have not been surpassed by any army in the history of the world. It is the most eventful period in the history of the late war, whether it is looked upon from a military or from a medical point of view. In the words of Sir Alexander Tulloch, it is said, that "never, perhaps, since the hand of the Lord smote the host of the Assyrians, and they perished in a night, has such a loss from disease to be recorded."

The subsequent era of this period extends from April, 1855, till the evacuation of the Crimea, and is characterised by a gradual return to health and efficiency, equally unsurpassed by troops in a camp.

unhealthy. The summer season changed imperceptibly into that of autumn; and, regarding autumn as a whole, Dr. Smart knows no country in which the climate is found more agreeable to the sensations, by a succession of cool nights to warm clear days, than marked its course to the end of October, when the north wind, blowing coldly at intervals, suggested the necessity of a return to winter clothing. The change from autumn to winter, in 1854, was as sudden as that from winter to spring; this change depresses even more than that exhilarates, in consequence of the continued rains, rather than of severe cold, attending its commencement. The sudden mutations of temperature, to which the climate of the Crimea is liable in the winter months, was more hurtful to the health of our forces than any other of the climatic conditions. These changes of heat and cold were the sequences of the shiftings of the winds from the northerly to the southerly direction, and *vice versa*. A fall of 30 degrees within a few hours was by no means an unfrequent occurrence."

Formation of the Camp before Sebastopol.—On the 26th and 27th of September, 1854, the army arrived at Balaklava, and almost immediately moved up in front of Sebastopol. About a fortnight afterwards the troops began to break ground. From the commencement it appears that the tents were arranged more closely than was consistent with the preservation of health amongst masses of men.* No account of the state of the army immediately after the arrival at Balaklava has yet been published, but the following "*morning state*" on the 2d of October gives a sufficiently good idea of the state of the troops for the purposes of future reference.

ABSTRACT OF THE MORNING STATE OF THE ARMY IN THE CRIMEA ON
THE 2ND OF OCTOBER, 1854.

	Officers.	Sergeants, Drummers, Trumpeters, Rank and File.						
		Under arms.	Men otherwise employed.	On command.	Total effective.	Total sick.	Sick.	
							Present.	Absent.
Cavalry,	163	1,982	112	190	2,284	490	159	331
Artillery Engineers,	149	3,154	73	151	3,378	230	5	225
Infantry,	772	18,246	1,053	2,904	22,203	6,057	164	5,893
General total,	1,084	23,382	1,238	3,245	27,865	6,777	328	6,449
					34,642		6,777	

Commencement of Epidemic Sickness in the Camp, and general Statement of Mortality.—About a month after the army had sat down before Sebastopol, sickness began to increase in a remarkable degree; and more especially after the 29th of October, when

* Layard in Minutes of Evidence, l. c.

the rain began to fall. The mortality of this and the four following months arose from disease alone, and has been estimated by Mr. W. B. Hodge, in his paper already referred to, as going on at "the annual rate of 87 per 1000; or three-fourths of that, from the same cause, among the troops engaged in active service in the Peninsula."*

The Crimean Commissioners state in their report, that the mortality for the seven months ending the 30th of April, 1855, appeared to amount to about 35 per cent. upon the average of strength, which appears (as Mr. Hodge states) to be equal to an annual ratio of 60 per cent., or 600 per 1000!

Sir Alexander Tulloch more recently writes:—"That after dividing, according to the several arms of the service in which it occurred, the aggregate loss from sickness alone during the winter of 1854-55, in the Crimean army—including what took place at Scutari and on the sea passage—the following results are obtained:†—

The average loss of Infantry, as roughly estimated in the Commissioners' report, was	39 per cent.
But in the Naval Brigade, which took a very prominent part in the operations during the whole siege, it was under	4 "
The loss of Cavalry was	15 "
Of Artillery,	18 "
While the loss of Officers, of all arms, was about	6 "

"But dividing the infantry into groups, according to the periods of their arrival in the Crimea and the localities they occupied, the following are the results:—

The average loss of four regiments which arrived in and about January, and did not for nearly a month take any part of the duties in the front, was only.....	7 per cent.
The average of four other regiments, which arrived in December, and were sent immediately to the front, was	27 "
In the Highland Brigade, stationed at Balaklava, the average was	24 "
While in the regiments employed in front, on which the duties of the siege chiefly devolved, the average was	45 "
And in eight of these corps which suffered most, it was	73 "

"Compared with such a loss," writes the able reviewer, "the mortality in our army, on all previous occasions, sinks into comparative insignificance. Even that of Walcheren, which threw the nation into mourning, and for years convulsed our senate, did not exceed a fourth part of the average here recorded."‡ He continues also to write, that it must remain matter of conjecture how far such losses are to be attributed to privations and over-work, as causes of the disease and sickness which led to them; and

* Statistical Journal, vol. xix., p. 250.

† Review by Sir A. Tulloch, *l. c.*, introduction, p. xiii.

‡ Review, by Sir A. Tulloch, *l. c.*, p. xv.

therefore, I think, it may safely be presumed that the inquiries regarding the causes which led to such losses by disease amongst the troops in the Crimea, during the first seven months of the campaign there, have not yet fully attained the object for which they were instituted; namely, to ascertain and assign to each cause an approximative value as an active agent in the induction of disease.

It is entirely due to the laborious exertions of Sir John M'Niell and Sir Alexander Tulloch, that we are indebted for precise information regarding the causes of the unprecedented losses to the strength of the army, which took place during the first seven months of the campaign in the Crimea. They have shown, in the clearest possible manner, how these losses are attributable to the combined influence of several causes, the chief of which are—

1. The influence of circumstances inherent to warfare, and especially the excessive amount of duty to be performed by men few in number, and inadequate in strength.

2. The influence of departmental deficiency, to which the great privations of the troops are in a great measure due.

3. The pernicious endemic influences of certain localities in which bodies of men were encamped.

But notwithstanding all that has been written about this eventful period, there are elements of causation in the induction of disease amongst the troops of the allied armies which have been entirely overlooked, disregarded, and lost sight of, throughout all the inquiries into the nature and origin of the sickness and diseases of the soldiers in the Crimea. One cause to which I allude may be characterised as the *persistent pernicious influence of the inactive residence in Bulgaria*, during a period of three months, on the subsequent health of the troops in the Crimea.

In a former part of this history, published in the last number of this Journal,* I noticed (although I could not then prove), that definite evils appeared to have resulted from the residence in Bulgaria. I purpose now to demonstrate, that the inactive residence in Bulgaria during three months exercised a persistent pernicious influence upon the health of the troops in the Crimea, and which continued to make itself felt, more or less, throughout the campaign, but more especially during the first seven months. Nay, it may even now be doubted, whether many who passed through the campaign in Bulgaria are as well able to resist disease and sickness as their constitutions were wont to do.

It has been shown, in the former part of this narrative, how the health of the troops was impaired during their residence in Bulgaria—and how, during the flank march, the fate of the more feeble soldiers was at once sealed by death. But the fatal influ-

ence of the Bulgarian residence did not end here, and although this circumstance has been hitherto completely overlooked, there are materials to show—

1. That the loss to the strength of the army, during the first seven months, was greatly more in those regiments which had been in Bulgaria, than among those troops who had not lived there, but who served during the same period in the Crimean campaign.

2. That the loss of strength to the whole army was greatly increased, by the, proportionably, very large amount of loss sustained by the drafts sent out to recruit the regiments.

3. That the general mortality, also, was increased amongst the ex-Bulgarian troops, and that the invaliding was nearly doubled.

4. That the persistent pernicious influence of the residence in Bulgaria showed itself, in a remarkable manner, by the unfavourable results of the surgery of the war on the ex-Bulgarian troops, compared with those troops who served in the Crimea only.

Sources of Information. — The statistical information which demonstrates the statements I have now enunciated, has been obtained from the following sources:—

1. Parliamentary Paper, No. 42, of the Session 1857, which contains, amongst other information, the dates of the arrival in the East of each regiment, together with its original strength on joining the allied army.

2. Parliamentary Paper, No. 218, of Session 1855, pages 474–479, which shows what drafts were sent out to recruit the different regiments in the Crimea, the amount of that draft, and the period of its arrival in the Crimea.

3. It is known from several sources,* what were the respective regiments which served in Bulgaria.

4. I have been permitted to make use of unpublished returns, collected by Sir Alexander Tulloch from individual regiments, and which show the monthly strength of these regiments in the Crimea from October till April inclusive, and the diseases from which they suffered.

5. The published summary of Sir Alexander Tulloch, in his book on the “Crimean Commission and the Chelsea Board,” before noticed.

To demonstrate the statements I have made, it is necessary, in the first place, to classify the Crimean army into two parts; namely—

First, into the troops which served both in Bulgaria and in the Crimea, and which I have called the *ex-Bulgarian* part of the army, in the subsequent commentary.

* *E. g.*, Parliamentary Paper, No. 218, 42; and also, Russell's History of the War.

Second, into the troops which served in the Crimea only, and which may be simply termed the *Crimean troops*.

In considering the sanitary condition of the British army in the Crimea, as influenced by the two circumstances now specially noticed, namely, (1) the residence in Bulgaria, and (2) the drafts sent out to recruit the regiments at various times, I offer the following results, merely as *approximative* conclusions to the truth from data not sufficiently extensive to give such conclusions with absolute accuracy.

These topics, however, are of such importance that in all future pathological investigations regarding the nature of the diseases from which our troops suffered, not only in the camp before Sebastopol, but also at Scutari and other local hospitals, their influence must occupy a prominent place in the causes of sickness, mortality, and loss of strength—a place, however, which has not yet been distinctly assigned to them.

The following are the more important particulars which the tables appended to this chapter illustrate, and which demonstrate the pernicious influence of the residence in Bulgaria, as a cause of disease.*

A.—TABULAR STATEMENTS TO SHOW THE INFLUENCE OF THE BULGARIAN RESIDENCE ON THE GENERAL HEALTH OF THE TROOPS.

DISEASES.	Total admissions of ex-Bulgarian troops.	Ratio per cent. to the total admissions.	Total admissions of Crimean troops.	Ratio per cent. to the total admissions.
Fevers,	6,179	24.2	2,780	16.2
Cholera,	1,007	3.9	872	5.2
Scorbutic diseases,	1,294	5.0	540	3.2
Enteric diseases,	11,098	43.1	7,750	46.8
Frost-bite,	1,034	4.0	810	4.9
Pulmonary diseases,	1,887	7.4	1,110	6.7
Other diseases,	2,960	11.6	2,671	16.1
Total admissions,.....	25,459		16,533	
	170 per cent. of the strength.		186.1 per cent. of the strength.	

This table shows that the Crimean portion of the army suffered a greater loss of strength by admissions to the hospitals, than the ex-Bulgarian troops did, by 16 per cent. on their respective strengths; and the following is a tabular view of the diseases

* Communicated from the author, by Dr. Jenner, to the Medico-Chirurgical Society, June 9, 1857.

which prevailed in each of the two portions of the army, arranged in the order of their greatest ratio to the whole admissions :—

EX-BULGARIAN FORCE.

CRIMEAN FORCE.

Per cent. on total admissions for all diseases :—

Enteric diseases, ..	43.1	Enteric diseases, ..	46.8
Fevers,	24.2	Fevers,	16.2
Pulmonary diseases, ..	7.4	Pulmonary diseases, ..	6.7
Scorbutic diseases, ..	5.0	Cholera,	5.2
Frost-bite,	4.	Scorbutic diseases, ..	3.2
Cholera,	3.9	Frost-bite,	4.9

But while the admissions to hospital were so much greater among the Crimean portion of the army, the deaths per cent. on these admissions were very much greater amongst the ex-Bulgarian part, as shown in the following table :—

Deaths per cent. on total admissions for each disease, the diseases being arranged in the order of greatest mortality :—

EX-BULGARIAN FORCE.

CRIMEAN FORCE.

Cholera,	63.5	Cholera,	53.5
Frost-bite,	25.4	Enteric diseases, ..	17.7
Enteric diseases, ..	24.2	Fevers,	17.2
Fevers,	23.3	Frost-bite,	16.3
Wounds and injuries, ..	19.1	Wounds and injuries, ..	13.7
Scorbutic diseases, ..	11.3	Scorbutic diseases, ..	8.0
Pulmonary diseases, ..	11.0	Pulmonary diseases, ..	7.4

When we contrast the sanitary state of these two divisions of the army by means of the fore-going tables, the following general statements may be made :—

1. That the admissions were greater amongst the Crimean portion of the army than amongst the ex-Bulgarian, and were chiefly due to enteric diseases, scorbutic diseases, and cholera ; while the admissions from the ex-Bulgarian portion were chiefly due to fevers and pulmonary diseases, compared with the other (Crimean) portion of the army.

2. That while the admissions were greater from the Crimean portion, the mortality compared with the amount of admissions was much greater amongst the ex-Bulgarian portion of the army than amongst the Crimean.

The ratio of mortality chiefly rose from, (1), cholera ; (2), frost-bite ; (3), enteric diseases, and (4), fevers amongst the ex-Bulgarian part ;—and from, (1), cholera ; (2), enteric diseases ; (3), fevers ; (4), frost-bite amongst the Crimean troops.

The most interesting features in these antithetical conditions are presented by the history of fever and cholera amongst the troops.

In the case of fevers, the difference in the per-centage was 8 per cent. more, on the whole admissions, in the ex-Bulgarian regiments ; namely, 24.2 per cent. in the one, and 16.2 per cent. in the other. And when it is considered that about 3.3 per cent.

is about the usual average of fever patients admitted into hospitals in large cities, such as London (*e. g.*, Guy's), it is at once made obvious how prevalent were fevers in the Crimea, and especially amongst the ex-Bulgarian troops, compared with the total admissions for all other diseases.

That the men were "used up" by the Bulgarian campaign is very clearly shown by the fact, that they more readily succumbed—they were less able to cope with disease when attacked—and that more of them died. To show this, it is necessary to consider the classes of diseases one by one. And,

1. *Of Fevers.*

	Ex-Bulgarian Force.	Crimean Force.
Total admissions to hospital in Crimea,.....	6,179	2,780
Admissions per cent. on average strength,.....	41.3	31.2
Died in Crimea,.....	919	294
Deaths per cent. on average strength,.....	6.1	3.3
“ on total admissions,.....	14.7	10.5
Died at Scutari or elsewhere,.....	531	186
Deaths per cent. on average,.....	3.6	2.0
“ on total admissions,.....	8.6	6.7
Total deaths per cent. on average strength,.....	9.7	5.3
“ “ on total admissions,.....	23.3	17.2
Invalided to England,.....	242	159
“ per cent. on average strength,.....	1.6	1.5
“ “ on total admissions,.....	3.9	5.0

The summary here given shows, that in fevers the admissions by the Bulgarian regiments were greater by 10 per cent. on the strength of the troops, while the deaths per cent. were nearly double, compared with the Crimean portion of the army. On the total fever admissions, the deaths per cent. were more in the Bulgarian regiments by 6.1 per cent., being at the rate of 23.3 per cent. In civil hospitals at home—such as Guy's, London—10.3 per cent. on the admissions is the average mortality from fever.

On looking to the numbers invalided, fewer appear to have been left amongst the Bulgarian troops to be able to avail themselves of this source of escape from suffering; for the numbers invalided from fever, amongst the Crimean troops, was greater by nearly 3 per cent.

2. *Cholera.*

	Ex-Bulgarian Force.	Crimean Force.
Total admissions to hospital in Crimea,.....	1,007	872
Admissions per cent. on average strength,.....	6.6	9.8
Died in Crimea,.....	623	467
Deaths per cent. on average strength,.....	4.1	5.2
“ on admissions,.....	61.8	53.5
Died at Scutari or elsewhere,.....	28	5
Deaths per cent. on admissions,.....	1.7	—

With regard to cholera, it is most interesting to notice the similarity of pathological phenomena presented by the history of

this disease in Bulgaria and in the Crimea. Up to and including the period we are now considering, two separate epidemics may be said to have affected the troops. The Bulgarian campaigners were exposed to both of them. We know that in the first epidemic in Bulgaria they suffered severely, and indeed, so long as they remained in the neighbourhood of Varna, the disease never left their camps. They carried it with them to the Crimea, and it continued to seize and kill many victims on the march from Old Fort to Balaklava, and more especially after the battle of the Alma, and on the famous flank march, when the fate of many a feeble soldier was at once sealed by death.

In the subsequent Crimean epidemic, the per-centage of admissions on the average strength of the troops who served only in the *Crimea*, compared with the *Bulgarian* campaigners, was much greater in the *former* than in the *latter*, and the per-centage of deaths *on the strength* was also greater. But again, on the contrary, the per-centage of deaths *on the admissions* was greater amongst the ex-Bulgarian forces by 8·3. According to what is known of the history of this remarkable disease, the first feature noticed may be explained by the fact, that already, during the Bulgarian campaign, the more susceptible of the troops had been seized with the disease, and died. The "disease had already worked itself out upon them," as a body of men; consequently, fewer took the disease subsequently in the Crimea, and fewer died. But again, from the "used-up" condition of the troops, a larger per-centage died of those who were attacked among the *ex-Bulgarian* troops, than of those who were attacked amongst the troops who had only been in the *Crimea*.

3. *Scorbutic Diseases.*

	Ex-Bulgarian Forces.	Crimean Forces.
Total admissions to hospital in Crimea,	1,294	540
Admissions per cent. on average strength,	8·6	6·1
Died in Crimea,	106	28
Died on total admissions,	8·2	5·1
Died in Scutari or elsewhere,	42	16
Deaths per cent. on total admissions,	3·1	2·9
Total deaths per cent.,	11·3	8·0
Invalided to England,	32	18
" per cent. on admissions,	2·5	3·3

With regard to scorbutic affections, it can very readily be understood how the "used-up" condition of the ex-Bulgarian troops predisposed to the scorbutic state, in connection with the state of matters in the Crimea, as shown in the Commissioners' report; and accordingly we find, that amongst them the admissions per cent. on the average strength were greater by 2·5 per cent., and the deaths greater by 3·3 per cent., than amongst the Crimean troops.

4. *Enteric Diseases.*

	Ex-Bulgarian Forces.	Crimean Forces.
Total admissions to hospital in Crimea,....	11,098	7,750
Admissions per cent. on average strength, ..	74.1	86.1
Died in Crimea,.....	1,057	686
Deaths per cent. on average strength,	7.0	7.7
“ “ admissions,.....	9.5	8.8
Died at Scutari, or elsewhere,	1,648	690
Deaths per cent. on average strength,	11.0	7.7
“ “ admissions,.....	14.7	8.9
Total deaths per cent. on average strength,..	18.0	15.4
“ “ admissions,	24.2	17.7
Invalided to England,	384	211
Invalided per cent. on strength,.....	2.5	2.3
“ “ admissions,.....	3.4	2.5

With regard to enteric affections, the ex-Bulgarian troops were in the same predicament as in the choleraic class of diseases. The susceptibility to them had been already pretty well exhausted in Bulgaria; and accordingly we find that more were admitted amongst the new-comers for diseases of the stomach and bowels; and the deaths per cent., both on admissions and on strength, were greater amongst the ex-Bulgarians.

One remarkable particular connected with this class of diseases, is the great comparative mortality amongst the troops at Scutari (23.6 per cent. against 18.3 in the Crimea). Such facts tend to confirm the belief entertained by not a few, that not only were the diseases prolonged and tedious at Scutari, but that Scutari, not only as shewn by such results, but from its physical climate, as given in the first chapter of this history, was a very unfavourable place for convalescence:—conditions rendered still more unfavourable from the very largeness of the hospitals.*

5. *Frost-Bite.*

	Ex-Bulgarian Forces.	Crimean Forces.
Total admissions to hospital in Crimea,.....	1,034	810
Admissions per cent. on average strength,...	6.9	9.0
Died in Crimea,	82	34
Deaths per cent. on admissions,	7.8	4.1
Died at Scutari, or elsewhere,.....	184	99
Deaths per cent. on strength,	1.2	1.1
“ “ admissions,	17.6	12.2
Total deaths per cent. on admissions,.....	25.4	16.3
Invalided to England,	73	51
Invalided per cent. on admissions,	7.8	6.6

Of the sufferings of the troops from frost-bite, we observe that there were more admitted to hospital amongst the soldiers who served in the Crimea only, than of the ex-Bulgarian campaigners; but that the per-centage of deaths amongst the *ex-Bulgarian*

* I do not wish it to be understood that the physical climate of Scutari induced of itself diseases there; but I do mean to say that the nature of the climate, the local position of the hospitals in relation to the heights and levels of the surrounding country, their southern exposure, proximity to the shore of a tideless sea, their condition as to drainage, their over-crowding and the occupation of the corridors by patients, all combined to develop diseases there (such as typhus fever), and to maintain it when imported.

troops was very much greater than amongst the *Crimean*, namely, 25·4 against 16·3, a greater mortality by 9·1 per cent. With respect to Scutari, the same fact is illustrated, already alluded to in the preceding paragraph, namely, that the ultimate sufferings of the troops from this class of diseases were of the most prolonged and tedious kind.

When, therefore, such facts are connected with an observation also made by Sir Alexander Tulloch, to the effect that "it was only by degrees that the small proportion who returned, of those who had left the Crimea sick, awakened a suspicion of the fatal character of the disease, and the extent to which the constitution of the troops had suffered by the hardships and privations they were undergoing," no other conclusion can possibly be arrived at than that Scutari was unfavourable for convalescence, and an unfit place for the treatment of such large numbers of the sick.

It is stated by Sir Alexander Tulloch that the deaths which took place at Scutari were not always from the same disease as originally came under treatment in the Crimea. Many who were sent away from the army suffering only under frost-bite or scurvy, recovered from these in a great measure at Scutari, but died subsequently from fever contracted there; while in other cases, men who had been sent from the Crimea labouring under fever partially recovered, but afterwards sank under diarrhoea or dysentery. About the beginning of May, when I arrived at Scutari, I saw many lingering cases remaining in the hospitals there, whose diseases, contracted in some part of the previous seven months, did not terminate in death for some time afterwards; and from the following tabular statement of the monthly deaths at the Crimea and at Scutari, it will be seen that the increasing mortality, commencing in the Crimea, was transmitted, as it were, to Scutari, and that the mortal influence continued there long after it had ceased in the Crimea.

6. *Tabular Statement of Deaths which occurred at Scutari and the Crimea during the monthly periods from October till April, inclusive.*

	Crimea.		Scutari.
October,	194		144
November,	620		228
December,	1030		423
January,	1269		1193
February,	885		1261
March,	652		587
April,	313		216

Sir Alexander Tulloch further remarks, that during the excessive prevalence of disease in the Crimea, the majority of the sick were transferred to Scutari as fast as they could be conveyed; and such was the intractable character of the diseases, combined with the impaired constitutions of the men, that the deaths which occurred at Scutari and on the passage there nearly equalled those which took place in the Crimea.

The loss from disease was at first much underrated. For several months no accurate or complete returns appear to have been received from Scutari, to show what had become of the invalids sent there; but this remark may also be reciprocated in this way, that no returns could be obtained at Scutari to show the nature of the diseases from which individuals sent from the Crimea had suffered there. It was found that, of all who embarked as invalids, more than one-third died on the passage, or after their arrival at Scutari, thus raising the real mortality to more than double what at first appears by the regimental returns.*

It is also a known property of the miasmatic diseases of the zymotic class, that one type of diseases gives way in epidemics to those of another, so that intermittent and typhus frequently follow in cycles, and also that the state of affairs at Scutari was highly favourable for the development of fever of the typhus type during the early part of this period.

The observations of Dr. Haller, collected in the military hospitals of Vienna from 1849 to 1853, showed that in 1849 intermittent fever was very prevalent before the outbreak of typhus in the military hospitals there, and it was observed that in proportion as the intermittent fevers diminished, the typhous fevers increased, and when the typhous fevers were raging at a maximum, the former disease had quite disappeared, and that as the typhous decreased in severity, the cases of intermittent fever began again to return.

The practical inference to be drawn from such an observation is, that where an army has been exposed to such miasmatic influences as existed in Bulgaria, and which are known to induce fevers of the paludal type, an epidemic of typhus may be very readily set up, when the men are brought into those other circumstances favourable to the development of the typhous poison, and also of dysentery. We have already seen that the physical climate of Scutari was not a salubrious one; and the condition of its immense hospitals about the end of November, December, and January, combined with other malarious poisons, was highly conducive to the development of the typhous poison; and it is farther known that the typhus which succeeds paludal fever in an army depends upon a distinct set of causes which in a great measure are controllable.

Dr. Haller observed, that the contagious principle of typhus is lighter than atmospheric air, and always ascends. This author ascertained satisfactorily, not only by ozonometrical experiments, but also by direct and careful observations, that ozone, when admitted into a fever-ward, became first lost in the upper regions of the atmosphere. Moreover, when the under stories of an hospital were filled with typhus patients, those in the upper stories were always observed to become infected, when

* Sir A. Tulloch's review, *l. c.*

there was a communication between the air of the two stories. On the contrary, when only the upper stories contained cases of typhus, the patients in the under part of the house enjoyed perfect immunity from the disease, although there was atmospheric access between them both. He observes that *dark*-coloured materials of clothing, are more prone to absorb the contagion of typhus, and to convey it to other individuals, than those which are *light*-coloured. He found that among troops wearing dark-coloured uniforms it more frequently happened that new cases of typhus entered the hospital after a convalescent patient had re-joined his *corps*, than among those wearing light or white-coloured uniforms.

A similar observation was made by Stork, who found that in dissecting rooms dark-coloured clothes acquired the cadaveric odour sooner, and were deprived of it less easily, than light-coloured garments. He ascertained by experiments that the absorption of odours by coloured bodies is regulated by the laws which govern the absorption of light, and that the power of attracting odours is regulated in all bodies by the degree and intensity of their dark colour.

As these remarks have a practical bearing, it would be interesting to know how far they are capable of verification by the experience of the army medical men at Scutari. In 1849 the epidemic of typhus in the military hospital at Gumpendorf commenced spontaneously in two of the surgical wards, in which there were a great many patients with mortifying wounds, and with gangrenous buboes. In the space of eight days all the patients in these wards were attacked by the fever; a circumstance which shows, 1st, that typhus, under certain conditions, may become developed spontaneously, quite irrespective of contagion; 2nd, that the effluviæ of putrescent animal substances and dysenteric evacuations render the atmosphere in which they are diffused, prone to the development of the typhus poison.

There can be no doubt, from all that can be gathered from the history of the mortality at Scutari in January, and especially in February, of 1854, combined with the evidence of post-mortem examination of cases which lingered on for months after that period, that the origin of the fever at Scutari and its nature were similar to that recorded in the Gumpendorf military hospital at Vienna.

7. Pulmonary Diseases.

	Ex-Bulgarian Forces.	Crimean Forces.
Total admissions in hospital in Crimea,	1887	1110
Admissions per cent. on average strength,	12.7	12.5
Died in Crimea,	126	55
Death per cent. on admissions,	6.1	4.0
Died at Scutari or elsewhere,	94	38
Deaths per cent. on admissions,	4.9	3.4
Total deaths per cent.,	11.0	7.4
Invalided to England,	172	72
Invalided per cent. on admissions,	9.0	6.4

Of pulmonary diseases, the ratio of admissions was nearly the same in both divisions in which we have divided the army; but the deaths amongst the ex-Bulgarian troops were greater by nearly 4 per cent., and that the number invalided to England were greater by 4.6 per cent. The nature of these pulmonary affections I have not been able to ascertain; and it would be of interest to know how far the diseases were idiopathic, or in how far the tendency to scrofula and tubercle was developed by the Crimean and Bulgarian campaigns.

8. *Other Diseases.*

	Ex-Bulgarian Forces.	Crimean Forces.
Admissions to hospital in Crimea,	2960	2671
Admissions per cent. on average strength,	19.1	30.0
Died in Crimea,	111	74
Deaths per cent. on admissions,	3.7	2.7
Died at Scutari,	132	62
Deaths per cent. on admissions,	4.4	2.3
Invalided to England,	365	164
Invalided per cent. on strength,	2.4	1.8
“ on admissions,	12.3	6.1

This last class, under which a very great variety of diseases are brought together, on account of the antiquated nosology employed by the army medical department, seems to show, in the same way as most of the others have done, the “used up” condition of the ex-Bulgarian troops; but the details are not sufficient to found any other definite observations upon.

B.—THE INFLUENCE OF THE RESIDENCE IN BULGARIA, AS SHOWN BY THE RESULTS OF THE SURGERY OF THE WAR.

Statement showing the Results of Wounds and Injuries.

	Ex-Bulgarian Forces.	Crimean Forces.
Deaths per cent in the Crimea on the total admissions,	9.1	8.6
Deaths per cent. at Scutari on the total admissions,	10.0	5.1
Invalided per cent. on the admissions,	45.1	20.4

This numerical statement shows, in another phase, the persistent pernicious influence of the residence in Bulgaria upon the troops, by the comparative results of the surgery of the war.

It will be observed that the ratio of the deaths per cent. in the Crimea and at Scutari, on the total admissions for wounds and injuries, was 19.1 per cent. amongst the ex-Bulgarian troops, and 13.7 per cent. amongst those who served in the Crimea only.

It may be here also noticed, for the sake of comparison, that amongst surgical patients in large city hospitals, such as Guy's in London, the ratio of the deaths per cent. on the total surgical admissions, is 11 per cent., a statement which puts in a very favourable light the successful results of the surgery of the war.

With regard to Scutari, it is to be noticed in this instance also,

that the per centage of deaths was much greater at Scutari than in the Crimea.

The ratio of the numbers who were invalided amongst the ex-Bulgarian troops for wounds and injuries, was nearly double those in the Crimean portion of the army, a statement which is of general application to all the classes of diseases already noticed.

C.—THE INFLUENCE OF THE BULGARIAN CAMPAIGN ON THE STRENGTH OF THE ARMY.

The persistent pernicious influence of the residence in Bulgaria is still further shown by the comparatively *greater reduction of strength* amongst the *ex-Bulgarian* forces than amongst those who served in the Crimea only.

This comparative reduction of strength can only be demonstrated approximatively, and may be inferred from the following considerations :—

1. From the actual deaths in each portion of the army, and the ratio of these to the admissions and to the original strength.

2. From the ratio of deaths and invaliding, on the admissions, and on the original strength of each of the two divisions of the army.

3. From the per centage of drafts required to recruit the strength of the troops in each of the two divisions of the army.

4. From the actual loss of strength, by sickness, deaths, and invaliding, in each of the two portions of the army, *if drafts had not arrived*.

The absolute loss by deaths and invaliding, in each portion of the army, is as below :—

EX-BULGARIAN.				CRIMEA.			
	Deaths.	Invalids.		Deaths.	Invalids.		
Cholera,	{ Crimea,.... 623 }	 —		{ Crimea,.... 467 }	 —		
	{ Scutari,.... 28 }			{ Scutari,.... 5 }			
Frost-bite,	{ Crimea,.... 82 }	 73		{ Crimea,.... 34 }	 51		
	{ Scutari,.... 184 }			{ Scutari,.... 99 }			
Enteric diseases,.....	{ Crimea,.... 1057 }	 384		{ Crimea,.... 686 }	 211		
	{ Scutari,.... 1648 }			{ Scutari,.... 690 }			
Fevers,	{ Crimea,.... 919 }	 242		{ Crimea,.... 294 }	 139		
	{ Scutari,.... 531 }			{ Scutari,.... 186 }			
Wounds and injuries,	{ Crimea,.... 212 }	 1059		{ Crimea,.... 99 }	 232		
	{ Scutari,.... 239 }			{ Scutari,.... 55 }			
Scorbutus,	{ Crimea,.... 106 }	 32		{ Crimea,.... 28 }	 18		
	{ Scutari,.... 62 }			{ Scutari,.... 16 }			
Pulmonary diseases,..	{ Crimea,.... 126 }	 172		{ Crimea,.... 55 }	 72		
	{ Scutari,.... 94 }			{ Scutari,.... 38 }			
Other diseases,.....	{ Crimea,.... 111 }	 365		{ Crimea,.... 74 }	 164		
	{ Scutari,.... 132 }			{ Scutari,.... 62 }			
Total,.....	6134	2327		2891	887		

RATIO OF DEATHS TO THE ORIGINAL STRENGTH PER CENT.

Ex-Bulgarian,..... 39·4 Crimean,..... 28·7

RATIO OF DEATHS TO THE ADMISSIONS.

Ex-Bulgarian,..... 20·4 Crimean,..... 10·7

RATIO OF INVALIDS TO ORIGINAL STRENGTH.

Ex-Bulgarian,..... 14·8 Crimean,..... 8·8

RATIO OF INVALIDS TO TOTAL ADMISSIONS.

Ex-Bulgarian, 9·1 Crimean,..... 5·3

ABSOLUTE LOSS OF STRENGTH BY DEATHS AND INVALIDING.

	Ex-Bulgarian Force.	Crimean Force.
Deaths,.....	6134	2891
Invalids,.....	2327	887
	8461	3778

RATIO OF LOSS PER CENT. TO ORIGINAL STRENGTH.

Deaths,.....	39·4	28·7
Invalids,.....	14·8	8·8
	54·2	37·5

Greater loss in the ex-Bulgarian part on the original strength by 16·7 per cent.

RATIO OF LOSS ON TOTAL ADMISSIONS.

Deaths,.....	20·4	10·7
Invalids,.....	9·1	5·3
	29·5	16·0

Greater ratio of loss in the ex-Bulgarian part on the total admissions by 13·5 per cent.

The amount of drafts sent out to recruit the strength of the two portions of the army were, during the six months after October, 1855 :—

To the ex-Bulgarian part,.....	7673 men.
“ Crimean part,.....	2656 men.

If we estimate the original strength of the ex-Bulgarian part in October at 15,589, and the Crimean part at 10,049, it appears that the ex-Bulgarian part had its original strength recruited at the rate of 40 per cent., and that the Crimean part was recruited at the rate of 26 per cent. on its original strength.

If we estimate the average strength for the period, *exclusive of the drafts*, in the two portions of the army at 7346 for the Crimean part, and 10,332 for the ex-Bulgarian part, then we find that the drafts were sent at the rate of 36 per cent. on the average strength of the Crimean portion, and at the rate of 74 per cent. on the average strength of the ex-Bulgarian portion. Thus it appears a greater strength had to be made up in the ex-Bulgarian than in the Crimean portion.

But in estimating the comparative average strength of these two portions of the army, and their fluctuations of strength from admissions to the hospital, deaths, and invalidings, it is evident that the numerical strength of the drafts ought to appear on the side of the Crimean troops, or be withheld altogether from both sides, in order to compare the ex-Bulgarian force with the force entirely Crimean.

As the periods of time of service of the various drafts necessarily varies much, it is difficult to state accurately the average

strength of the whole body of reinforcements, supposing them to serve the whole period of seven months. An approximation may, however, be made, thus :—

MONTHLY STATE OF EX-BULGARIAN FORCES,—AVERAGE STRENGTH, 15,589.

November.		December.		January.		February.		March.		April.	
Strgth. includ. drafts.	Drafts.	Strgth. includ. drafts.	Drafts.	Strgth. includ. drafts.	Drafts.	Strgth. includ. drafts.	Drafts.	Strgth. includ. drafts.	Drafts.	Strgth. includ. drafts.	Drafts.
16503	1997	15947	1393	15495	2416	14654	847	13326		13981	6308

AVERAGE MONTHLY STRENGTH, IF DRAFTS HAD NOT ARRIVED.

Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
14506	.. 12373	.. 9533	.. 7783	.. 6232	.. 6308
Average strength for the period, 10,332					
Total drafts sent, 7673					
Absolute loss, without drafts, 9384					
Gain, 900					
Loss, including drafts, 2611					
Absolute loss, with drafts, 1711					

By a similar analysis of the *Crimean* forces, the following general statement may be made, namely :—

Average strength for the period,	7346
Total drafts sent,	2656
Absolute loss without drafts,	6106
Gain,	6
Loss,	73
Absolute loss,	67

But the absolute strength of drafts, if extended over the whole period, must be estimated by numbers much less, because many served for a seventh, five-sevenths, or six-sevenths of the whole time only.

The corrected strength of the drafts to the ex-Bulgarian part, for the whole period, is thus estimated at 4491; and to the Crimean part, 1533; total, 6024.

The average strength of the two portions of the army, during the whole period, may now be stated as follows :—

Ex-Bulgarian,	10,332	
Crimean,	7,346	
Drafts to the whole,	6,024	13,370
Total mean strength by this computation,	23,702	
Total mean strength, as stated by Sir A. Tulloch,	23,775	

An approximation to the actual loss of strength in the two portions of the army, by admissions to hospital, by sickness, deaths, and invaliding, may now be stated in two ways.

1st, By the loss as indicated by the difference between the original strength and the average mean strength for the whole period.

	Ex-Bulgarian Force.	Crimean Force.
Original strength,.....	15,589	10,049
Average,....	10,332	7,346
	5,257	2,703

Loss on original strength, 33·7 per cent. | Loss on original strength, 26·9 per cent.

2nd, By the actual loss of strength, if drafts had not arrived, as follows:—

In the ex-Bulgarian part, the average strength being 10,332, and the actual loss during the period, if drafts had not arrived, being 9384, the per centage of loss of strength is represented by the number 90·8.

In the Crimean part, the average strength being 7346, the actual loss, if drafts had not arrived, being 6106, indicates a per centage of loss of 83·1.

The actual loss in the drafts, on comparing the gain or loss of the whole, including drafts, with the absolute loss, excluding drafts, shows an actual loss of strength due to them of 7604, which, if the average mean strength of the drafts for the period is estimated at 6024, gives a per centage loss of strength due to them of 120·5.

On comparing this computation of the loss of strength of the whole army with what actually took place, it will be seen that the approximation given is a very close one.

Total loss of strength by admissions to hospital in the whole Infantry Forces, including wounds and injuries,	45,477
Total loss by deaths and invaliding,	12,239
	57,716

Ratio of loss of strength on the whole army of 23,775 men = 242·6 per cent.

Ratio of loss of strength by the previous calculations = 294·4 per cent.

From these details it is clearly apparent that the long inactive residence in Bulgaria constituted a very prominent element of causation in the induction of disease in the Crimea; that its influence long continued to be felt as an influence of a most persistent and pernicious kind. Its effects are not without a parallel. On the return of our troops from Walcheren, they continued to suffer from paludal fevers, for five, six, eight, and eleven months after their arrival in this country.*

Other circumstances, no doubt, influenced in a very material degree the sickness and mortality amongst the troops in the East. These have been already enumerated. They were brought to light and demonstrated with the greatest possible clearness by Sir Alexander Tulloch, especially in a recent publication, in which he gives a summary of information collected by Sir John M'Niell and himself relative to the sickness, mortality, and prevailing diseases among the troops serving in the Crimea. The information contained in this summary might very justly stamp Sir Alexander Tulloch as the pathologist of the war; and if his valuable researches into the state of the individual regiments had not been made and

* Cyclop. Metrop., article "Medicine."

given in the summary now noticed, the influence of the residence in Bulgaria upon the troops could not have been traced, with anything like the precision necessary for such important investigations; although I was well convinced, from many observations brought under my notice while at Scutari, that the residence in Bulgaria was making itself felt, even at that remote period (May, 1855, till January, 1856). I had not the means, however, to prove or substantiate the impression, till the combined researches of Sir Alexander Tulloch, with the published statements contained in the parliamentary documents already referred to, furnished the necessary data upon which to found the conclusions which are here stated.

It may, perhaps, be contended by some, that the necessary operations of warfare bore with undue influence on some portions of the army in the East rather than on others, so as to render less clear the effects of the Bulgarian residence upon the troops. It will be seen, however, from Sir Alexander Tulloch's summary, that the brunt of the more severe duties of the front were chiefly sustained by that portion of the army which had been in the Crimea only, namely, the 14th, 18th, 39th, 71st, 17th, 34th, 89th, and 90th regiments, in which, as also in the Highland brigade, the mortality was as high as 45 per cent. for the whole period. So far, therefore, such a statement renders the pernicious influence of the Bulgarian campaign, *a fortiori*, more obvious; and so it cannot be said that the mortality amongst the *ex-Bulgarian* troops was in any way increased by the more severe and necessary operations of war. On the contrary, it is observed by him, that "great as was the loss amongst the *corps* in front, it was much below what some of the *corps* suffered, especially the following, in which the mortality greatly exceeded the average." These unfortunate regiments were the 46th, 95th, 63rd, 33rd, 23rd, 44th, 28th, and 50th.

The loss in these eight regiments averaged 73 per cent. during the seven months (Sir A. Tulloch's review, page 158). Now, it is worthy of notice, that six out of these eight regiments are *ex-Bulgarian* troops, and, with the exception of the 46th, whose great loss appears to have been from cholera immediately after their arrival, the cause of the great mortality among the other regiments is not attempted to be accounted for. On looking carefully into the general summary, which Sir A. Tulloch gives in a tabular form, it will be seen that fevers, enteric and scorbutic diseases, are those which swell the numbers on the lists of these regiments. The malarious influences imbibed in Bulgaria no doubt developed themselves by a zymotic-like action, under the melancholy state of things which Sir A. Tulloch and Sir John M'Niell so energetically and boldly brought to light.

The subsequent history of the *ex-Bulgarian* portion of the army in the Crimea very fully illustrates and substantiates a general

remark made by Sir Alexander Tulloch, namely, "that a distinction was manifested in favour of particular parts of the force with reference to immunity from the effects of disease, and which he ascribes as due, principally, to the diminished intensity of the diseases, or the greater strength of the constitution to resist their effects. The diminished intensity, or less susceptibility to disease, is manifest in the greater exemption from cholera amongst the ex-Bulgarian troops, in consequence of their having already been exposed to a severe epidemic of it; while the greater strength of constitution to resist the effects of disease is exemplified by those troops who were in the Crimea only, as well in regard to cholera as to other diseases. "The diseases made their appearance in all in a greater or less degree, but were less fatal wherever the strength of the patients had not been materially impaired previous to the attack, or a moderate degree of rest, comfort, and improved diet could be obtained." (Page 160, Sir A. Tulloch's review.)

This additional and important element in the causation of sickness, disease, and mortality amongst the troops in the Crimea I have attempted fully to illustrate in the preceding pages, does not invalidate the conclusion to which Sir Alexander Tulloch arrives, when he says, that most of the causes "appeared capable at least of mitigation;" nay more, I think that of all the causes which were suffered to operate to the permanent injury of our brave soldiers, the campaign in Bulgaria might have been avoided, or so modified, that so persistent a cause of sickness, disease, and mortality ought not to have had an existence. Every physician is ready to admit, that the prevention of disease is much more satisfactory than its cure; but until the position of the medical element in the army is elevated to a higher place, their powers to *prevent* diseases and turn aside their causes will continue to be feeble and inefficient. The position of the army medical man appears to be one of *toleration* merely. He is tolerated by the military element because he is sometimes found to be necessary; and the importance of his position in regard to the sanative welfare of the army is in a great measure ignored and not appreciated. Such a state of things in the nineteenth century is, to say the least of it, a national disgrace, and presents a very unfavourable contrast to the care which the ancients bestowed upon their armies.

In Xenophon's account of a dialogue between Cambyzes and Cyrus,* the latter remarks:—"With regard to health, since I have heard and seen that those states which seek for good health *educate physicians*, and that commanders take with them physicians for the sake of the soldiers,—I, too, therefore, as soon as the present expedition was intrusted to me, gave my attention to this subject, and I think that I have with me very competent medical men.'

* Cyropædia, Book I.

Cambyses.—"But these physicians, my son, of whom thou speakest, are like menders of torn garments, and thus they cure those that have fallen sick. But thy chief anxiety should be to provide for health; for thou oughtest to take care to prevent the army from falling into sickness at all."

Cyrus.—"And how shall I accomplish this object?"

Cambyses.—"If thou art about to lay up in a place, thou must first take care to pitch thy camp in a healthy spot; for men never cease to speak of unhealthy places as well as healthy, for the bodies and the faces of men are signs of both."

Who could not tell a Bulgarian campaigner and sufferer by his look?

Thus, competent medical men not only went with the army in those days, but they had such an influence with their commanders as to be permitted to guide them in the choice of a site for the camps; and I think every one will admit, that the medical element ought to have a much greater influence, power, authority, and position in the organization of the army than it has been hitherto permitted to enjoy. For example, with special reference to the last war, the head of the medical department with the army in the field, ought to have had a seat in the councils of war, and a voice in the discussions of that assembly, in so far at least as they affected the sanative position of the army.

The melancholy annals of warfare teem with abundant illustration to show that the humanizing influence of our noble profession is not sufficiently felt and appreciated by commanders of armies. I cannot quote a higher authority in support of this statement than that of the greatest historian of the age, the Hon. Thomas Babington Macaulay, when he observes, in writing of William Henry, Prince of Orange, that "it was too much the habit, even of the most humane and generous soldiers, to think very lightly of the bloodshed and devastation inseparable from great martial exploits; and the heart becomes steeled, not only by professional insensibility, but by that sterner insensibility which is the effect of a sense of duty." From the days of Nero to those of Lord Raglan, the most humane commander that ever lived, this historical truth has been sufficiently verified; and nothing appears to me so likely to effect a change for the better, as the humanizing influence of our profession; and to accomplish this desirable end, the whole of the medical staff must occupy a higher position in the organization of our army than it has hitherto enjoyed, a much greater deference must be paid to their professional opinion, and a much higher standard of professional education must be demanded of them before they enter the service.

I have already, in the previous chapter of this narrative, directed attention to the physical climate of Bulgaria, and the knowledge we possessed of the district in which our troops encamped there, and the condition our troops were in when they left the place. I have

shown how, in the face of known and recorded facts, how in the face of obvious physical phenomena, and in opposition to the best medical authorities which the military commanders could obtain, our troops were encamped in a district to absorb during twelve weeks those malarious elements of disease which developed themselves during the subsequent campaign in a zymotic-like manner, and proved so disastrous to our army in the Crimea, in the various ways I have attempted to show.

Physicians now are of one mind in referring to the head of "occasional causes of disease," all those circumstances and accidents, the operation of which upon the human frame is followed, at a more or less early period, by the establishment of definite morbid conditions. Physicians also are unanimous in the belief that the habitual, continued, or repeated operation of such occasional causes of disease give rise, in the first instance, to effects which constitute a predisposition to disease, so that while such circumstances are in the first instance exciting or external causes, they also become predisposing or internal causes of disease. The best examples of this combination are to be observed in the effects of terrestrial or miasmatic emanations from marshy or otherwise insalubrious or malarious districts, in the effects of residence in a very warm temperature where the solar heat is great, and lastly, in the effect of dietetic agency, such as bad or deficient food, and the habitual use of alcoholic or fermented drinks. It was a matter of observation that many, while in Bulgaria, were not suffering from any well-defined disease to which a name could be given—the men were being "used up," and though not *then* attacked by fevers, either of a remittent or intermittent type, yet they became the subjects of general impaired health, which showed itself by imperfect digestion, flatulence, diarrhoea, loss of muscular strength, sallow looks, morbid susceptibility to external impressions of cold or heat, with night-sweats, loaded turbid urine, and an unhealthy state of the cutaneous and mucous circulation, but without any manifest local disease. This was a common condition which frequently came under my own observation when at Scutari. Although in such cases an apparent restoration to health is effected, yet the constitution is so impaired that the application of any extraordinary external cause, such as wet, cold, privation, or fatigue, at once brings about the development of some zymotic disease, such as fever, dysentery, diarrhoea, cholera, scorbutus. Besides the illustrations of these results which the Crimean campaign affords, we have abundant examples of similar results in the lower or maritime Alps, in the Roman territory and Maremma of Italy, the Carolinas and Virginia of North America, the great district of the Sunderbund near Calcutta, as well as in many other similar localities.

It is, therefore, no proof of the absence of the malaria influences, that fevers of the remittent or intermittent type are either unfre-

quent, or do not occur at all; subsequent ill health and morbid sensibility to causes which, under ordinary circumstances, would not induce disease, bring on very readily visceral disorders, and such zymotic diseases as I have mentioned; and when such morbid influences prevail as that of the choleraic constitution (which extended itself, as it then did, over the larger portion of Western Europe), the condition of the army during its residence in Bulgaria was in the most susceptible condition possible for the development of that disease.

“A glance at the inhabitants of malarious countries or districts, shows that the range of disorders produced by the poison of malaria is very extensive. The jaundiced complexion, the stunted growth, the stupid countenance, the shortened life, attest that habitual exposure to malaria saps the energy of every mental and bodily function, and drags its victims to an early grave. Fever and ague, although two of the most prominent features of malarious influences, are as a drop of water in the ocean, when compared with the other less obtrusive but more dangerous maladies that silently but effectually disorganize the vital structures of the human fabric, under the operation of the deleterious and invisible poison.—(*Dr. James Johnson.*)

From the anxiety shown to acquire information, which competent medical men are alone able to obtain, the moral obliquity which leads those high in authority and in the direction of the movements of the army to ignore and neglect the knowledge and information so obtained, and always gladly given by the medical officers, is most inexplicable. For, notwithstanding the anxiety to get information, it is acknowledged by General Bentinck that it is not usual to take the opinion of any medical officer in the selection of the ground to encamp the various divisions of an army upon, “unless something occur to render it necessary.” What that “something” may be we are not enlightened upon; but if the method of research I have applied to illustrate the pathology of the past is correct in its results, it is to be hoped that the military element of the army will in future put a higher value upon the services of their medical officers, and that they will seek, obtain, and act upon their professional advice in regard to every movement of the army which may affect the sanative position of the soldiers, and before that mysterious “something” shall betray itself in the subsequent melancholy results which have decimated, not only in this instance, but in others, the best and noblest of armies.

NOTE.—A statement made in the concluding paragraph of the last chapter, with reference to the ambulance corps, on the authority of the Report on the State of the Hospitals, is shown by the Report of Sir John M'Niell and Sir Alexander Tulloch to have been incorrect. Only 35 of them died at Varna, out of a total of 350. (See pages 41 and 194 of Commissioners' Report.)

APPENDIX, TABLE I.—*Sickness and Mortality amongst the ex-Bulgarian Force in the Crimea.*

Nos. of the Ex-Bulgarian Regiments	FEVERS.				CHOLERA.			SCORBUTIC DIS.				ENTERIC DISEASES.				FROSTBITE.				PULMONIC DIS.				OTHER DISEASES.				WOUNDS & INJUR.			
	Average strength.	Admits. to H in Crimea.	Died in Crimea.	Died at Scutari.	Inv. to Eng.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scutari.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scu.	Invalided.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scu.	Invalided.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scu.	Invalided.	Admits. to H. in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.			
30th Regt.,	522	135	31	20	11	19	9	2	98	7	1	2	387	21	43	12	3	45	5	10	82	1	3	7	158	38	17	56			
55th,	695	236	17	23	12	32	15	..	34	4	2	2	710	15	50	15	1	147	3	4	156	1	5	11	124	6	7	55			
95th,	417	337	67	32	10	17	15	..	33	4	2	2	538	80	83	9	2	52	5	5	101	7	7	6	140	13	19	82			
41st,	684	313	53	23	6	7	6	..	54	..	4	1	354	24	43	8	4	206	6	7	161	2	3	6	180	9	10	51			
49th,	655	236	21	18	8	19	9	1	34	3	1	1	324	14	49	6	..	159	8	2	97	6	7	9	173	1	12	62			
4th,	508	366	24	25	7	34	23	1	33	2	1	..	397	30	57	13	4	170	7	8	56	2	5	14	41	5	2	3			
50th,	520	375	89	20	13	68	45	..	54	3	2	..	209	67	53	25	9	34	6	1	122	9	4	14	73	12	7	18			
28th,	522	389	67	17	16	38	28	1	47	8	2	1	8459	51	58	18	20	75	4	3	145	8	4	21	39	7	3	10			
38th,	689	342	102	25	7	38	20	1	141	..	4	10	764	9	70	15	81	109	6	8	181	2	3	20	72	10	2	11			
44th,	598	532	97	25	8	58	41	..	32	2	1	1	267	44	58	9	19	56	11	6	129	2	8	30	47	7	4	9			
R. Brig. 1st,	601	110	7	54	22	10	10	2	99	8	2	3	674	70	158	37	33	51	5	9	165	3	16	27	169	18	21	67			
42d,	704	120	8	9	6	55	37	..	23	..	..	..	359	18	31	6	9	77	4	2	107	4	3	7	25	1	4	8			
79th,	714	436	72	12	5	83	37	3	73	10	3	..	191	10	39	11	3	45	2	2	63	..	5	11	15	..	2	5			
93d,	727	277	42	9	9	22	12	..	73	20	..	..	224	14	32	14	..	115	9	2	89	..	8	21	20	..	4	21			
R. Brig. 2d,	641	202	6	..	..	40	21	..	29	3	..	..	623	8	..	..	97	87	..	6	207	6	..	..	100	7	..	..	..		
7th,	562	99	9	19	8	50	34	..	25	1	1	1	262	39	70	11	58	77	4	4	114	9	4	15	98	16	21	75			
23d,	579	136	20	22	10	78	41	4	43	3	..	2	447	124	71	14	46	28	5	2	93	3	5	14	78	9	12	65			
33d,	424	392	70	25	9	27	20	3	59	21	..	2	326	38	74	20	89	89	10	4	110	3	1	18	102	11	21	89			
1st Ft. 1st Ba.	771	173	23	12	11	110	74	..	22	..	1	1	492	113	80	21	53	44	1	7	96	6	8	14	58	4	1	7			
19th,	548	102	9	16	8	63	46	2	42	1	1	1	332	56	70	16	53	60	4	4	113	1	5	15	72	9	9	70			
77th,	736	169	31	18	5	32	16	4	110	3	4	..	510	54	48	18	37	76	4	3	96	4	7	22	117	9	7	31			
88th,	624	312	17	19	8	11	8	..	7	..	2	1	896	39	62	22	..	56	2	4	164	3	4	21	157	12	8	39			
G. Guards,	487	85	9	45	11	7	6	..	334	..	5	4	334	28	138	26	88	45	3	8	14	157	13	10	..	..	14	106			
Coldst. Gds.,	478	163	11	19	20	47	21	2	53	3	2	..	609	56	103	16	43	40	6	4	115	1	5	11	164	11	18	42			
Scotch Fus.,	553	145	17	24	12	43	29	1	76	..	1	1	400	35	108	22	15	64	1	3	60	6	10	18	101	7	14	77			
	14959	6179	919	531	242	1007	623	28	1294	106	42	32	11098	1057	1648	384	1034	1887	12694	172	2960	111	132	365	2323	212	239	1059			
Percent. on av. stren.	41.3	6.1	3.6	1.6	1.6	6.6	4.1	..	8.6	0.7	..	..	74.1	7.0	11.0	2.5	6.9	12.7	..	..	19.1	..	..	..	2.4	15.4	..	..	..		
" " admissions,	..	14.7	8.6	3.9	3.9	..	61.8	1.7	..	8.2	3.1	2.5	..	9.5	14.7	3.4	..	..	6.1	4.9	9.0	..	3.7	4.4	12.3	..	9.4	10.0	45.1		

APPENDIX, TABLE II.—*Sickness and Mortality amongst the Troops who served only in the Crimea.*

No. of the regiments of the line serving in the Crimea only.	FEVER.				CHOLERA.				SCORBUTIC DIS.				ENTERIC.				FROSTBITE.				PULMONARY DIS.				OTHER DISEASES.				WOUNDS & INJURIES.				
	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	Admitted to hos- pital in Crimea.	Died in Crimea.	Died at Scutari.	Invalided.	
47th Regt.,...	294	32	13	4	22	16	2	185	10	1	1	2	399	26	43	18	37	..	15	2	6	93	2	2	16	98	1	2	16	95	4	6	42
20th,	275	31	18	7	12	5	1	77	15	5	..	2	528	34	68	23	109	15	..	..	3	90	13	2	8	152	4	2	19	195	15	19	54
21st,	345	37	14	17	26	17	1	54	2	..	..	..	618	62	74	20	36	..	..	..	1	27	4	4	8	149	9	4	10	133	14	7	30
57th,	90	7	6	8	41	17	..	73	..	..	..	..	386	29	31	8	73	1	..	..	2	68	3	1	3	111	1	3	9	133	8	3	35
68th,	75	5	12	6	10	6	..	63	..	..	..	..	1372	39	54	10	12	..	..	..	4	22	2	4	2	418	1	5	13	70	20	2	17
68th detach.,..	154	67	2	..	1	..	..	3	..	..	..	..	172	..	..	..	1	..	..	..	..	56	1	..	..	59	..	..	..	12	..	..	..
63d,	448	84	32	11	..	..	1	..	..	4	2	..	245	95	91	18	..	..	..	..	..	101	5	4	1	146	21	17	19	99	7	8	32
62d,	430	200	24	5	34	23	..	19	1	..	..	..	415	35	29	12	41	6	..	..	1	101	5	4	1	123	2	3	7	16	..	..	..
9th,	37	1	3	3	108	77	..	7	..	..	..	..	369	33	41	19	40	..	..	..	2	37	2	1	4	128	..	4	8	28	4	..	..
46th,	184	36	19	12	304	113	..	29	..	2	1	1	547	79	106	21	92	..	..	..	7	82	3	5	9	292	23	5	25	43	5	2	9
97th,	646	129	18	10	9	132	63	17	..	1	1	1	299	81	59	19	35	1	..	..	10	10	3	2	2	104	1	2	7	39	4	4	2
89th,	433	42	3	9	3	40	..	4	..	..	..	..	568	62	39	14	100	..	..	..	4	71	..	2	2	134	2	3	9	34	4	2	3
17th,	561	116	5	9	2	21	16	..	..	..	..	..	430	30	6	1	83	3	..	..	6	53	1	1	..	110	1	4	3	33	3	..	1
34th,	504	84	6	3	6	46	34	..	..	..	..	..	257	9	15	5	31	..	..	..	2	82	2	3	1	104	1	2	4	48	2	2	3
90th,	419	79	7	15	2	55	26	9	..	2	..	..	285	49	19	7	91	7	..	..	4	7	2	..	1	80	1	2	10	36	3	3	1
71st,	330	163	10	5	3	3	2	..	..	..	..	..	78	..	..	2	1	..	..	..	..	13	..	..	..	84	..	..	1	6	..	..	..
14th,	423	129	2	1	6	2	..	..	..	..	..	..	318	..	..	2	3	..	..	..	..	166	..	..	3	209	3	1	1	47	1	..	..
39th,	401	161	5	6	10	10	..	..	..	1	..	..	278	3	6	5	1	..	..	..	1	45	..	..	..	106	2	2	1	22	3	..	..
18th,	475	226	15	6	..	..	..	..	..	..	..	..	186	10	9	7	27	1	..	..	3	39	..	1	2	115	1	1	2	43	2	..	..
8880	2780	294	186	139	872	467	5	540	28	16	18	7750	686	690	211	810	34	99	51	72	1110	55	38	72	2671	74	62	164	1132	99	58	232	
Per cent. on av. str.,	31.2	3.3	2.0	1.5	9.8	5.2	..	6.1	..	..	..	86.1	7.7	7.7	2.3	9.0	..	1.1	..	..	12.5	..	..	..	30.0	..	..	1.8	12.1	1.0	..	2.5	
" " admissions,	..	10.5	6.7	5.0	..	53.5	..	..	5.1	2.9	3.3	..	..	8.8	8.9	2.5	..	4.1	12.2	6.6	..	4.0	3.4	6.4	..	2.7	2.3	6.1	8.6	5.1	20.4		

No.	Date	Description	Amount	Balance
1	1890-1-1	Balance forward		100.00
2	1890-1-15	John Doe	50.00	50.00
3	1890-1-20	John Doe	25.00	25.00
4	1890-1-25	John Doe	25.00	0.00
5	1890-2-1	John Doe	25.00	25.00
6	1890-2-15	John Doe	25.00	0.00
7	1890-2-20	John Doe	25.00	25.00
8	1890-2-25	John Doe	25.00	0.00
9	1890-3-1	John Doe	25.00	25.00
10	1890-3-15	John Doe	25.00	0.00
11	1890-3-20	John Doe	25.00	25.00
12	1890-3-25	John Doe	25.00	0.00
13	1890-4-1	John Doe	25.00	25.00
14	1890-4-15	John Doe	25.00	0.00
15	1890-4-20	John Doe	25.00	25.00
16	1890-4-25	John Doe	25.00	0.00
17	1890-5-1	John Doe	25.00	25.00
18	1890-5-15	John Doe	25.00	0.00
19	1890-5-20	John Doe	25.00	25.00
20	1890-5-25	John Doe	25.00	0.00
21	1890-6-1	John Doe	25.00	25.00
22	1890-6-15	John Doe	25.00	0.00
23	1890-6-20	John Doe	25.00	25.00
24	1890-6-25	John Doe	25.00	0.00
25	1890-7-1	John Doe	25.00	25.00
26	1890-7-15	John Doe	25.00	0.00
27	1890-7-20	John Doe	25.00	25.00
28	1890-7-25	John Doe	25.00	0.00
29	1890-8-1	John Doe	25.00	25.00
30	1890-8-15	John Doe	25.00	0.00
31	1890-8-20	John Doe	25.00	25.00
32	1890-8-25	John Doe	25.00	0.00
33	1890-9-1	John Doe	25.00	25.00
34	1890-9-15	John Doe	25.00	0.00
35	1890-9-20	John Doe	25.00	25.00
36	1890-9-25	John Doe	25.00	0.00
37	1890-10-1	John Doe	25.00	25.00
38	1890-10-15	John Doe	25.00	0.00
39	1890-10-20	John Doe	25.00	25.00
40	1890-10-25	John Doe	25.00	0.00
41	1890-11-1	John Doe	25.00	25.00
42	1890-11-15	John Doe	25.00	0.00
43	1890-11-20	John Doe	25.00	25.00
44	1890-11-25	John Doe	25.00	0.00
45	1890-12-1	John Doe	25.00	25.00
46	1890-12-15	John Doe	25.00	0.00
47	1890-12-20	John Doe	25.00	25.00
48	1890-12-25	John Doe	25.00	0.00
49	1891-1-1	John Doe	25.00	25.00
50	1891-1-15	John Doe	25.00	0.00
51	1891-1-20	John Doe	25.00	25.00
52	1891-1-25	John Doe	25.00	0.00
53	1891-2-1	John Doe	25.00	25.00
54	1891-2-15	John Doe	25.00	0.00
55	1891-2-20	John Doe	25.00	25.00
56	1891-2-25	John Doe	25.00	0.00
57	1891-3-1	John Doe	25.00	25.00
58	1891-3-15	John Doe	25.00	0.00
59	1891-3-20	John Doe	25.00	25.00
60	1891-3-25	John Doe	25.00	0.00
61	1891-4-1	John Doe	25.00	25.00
62	1891-4-15	John Doe	25.00	0.00
63	1891-4-20	John Doe	25.00	25.00
64	1891-4-25	John Doe	25.00	0.00
65	1891-5-1	John Doe	25.00	25.00
66	1891-5-15	John Doe	25.00	0.00
67	1891-5-20	John Doe	25.00	25.00
68	1891-5-25	John Doe	25.00	0.00
69	1891-6-1	John Doe	25.00	25.00
70	1891-6-15	John Doe	25.00	0.00
71	1891-6-20	John Doe	25.00	25.00
72	1891-6-25	John Doe	25.00	0.00
73	1891-7-1	John Doe	25.00	25.00
74	1891-7-15	John Doe	25.00	0.00
75	1891-7-20	John Doe	25.00	25.00
76	1891-7-25	John Doe	25.00	0.00
77	1891-8-1	John Doe	25.00	25.00
78	1891-8-15	John Doe	25.00	0.00
79	1891-8-20	John Doe	25.00	25.00
80	1891-8-25	John Doe	25.00	0.00
81	1891-9-1	John Doe	25.00	25.00
82	1891-9-15	John Doe	25.00	0.00
83	1891-9-20	John Doe	25.00	25.00
84	1891-9-25	John Doe	25.00	0.00
85	1891-10-1	John Doe	25.00	25.00
86	1891-10-15	John Doe	25.00	0.00
87	1891-10-20	John Doe	25.00	25.00
88	1891-10-25	John Doe	25.00	0.00
89	1891-11-1	John Doe	25.00	25.00
90	1891-11-15	John Doe	25.00	0.00
91	1891-11-20	John Doe	25.00	25.00
92	1891-11-25	John Doe	25.00	0.00
93	1891-12-1	John Doe	25.00	25.00
94	1891-12-15	John Doe	25.00	0.00
95	1891-12-20	John Doe	25.00	25.00
96	1891-12-25	John Doe	25.00	0.00
97	1892-1-1	John Doe	25.00	25.00
98	1892-1-15	John Doe	25.00	0.00
99	1892-1-20	John Doe	25.00	25.00
100	1892-1-25	John Doe	25.00	0.00



